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Towards a dialogic management of cognitive competences

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Abstract: In this paper we examine the nature of the competences needed for promoting innovation and change. Taking our experiences as the starting point, we examined the literature and interviewed managers and those responsible for innovation in enterprises and discovered that our research findings contradict the simplistic view of innovation facilitation and management material in the work place. Our research suggests that for innovation to take place two contradictory notions, the order principle and the disorder principle, have to be engaged at the same time. As a philosophy, the Positivistic epistemology is unable to handle these contradictions. Therefore we suggest the use of Morin's "dialogy" as a way of managing these contradictions essential for innovation.

Keywords: Innovation and change, order and disorder, management, contradictions, dialogy

I. Introduction: skills and competences for innovation and change

We worked for a long time in innovative environments. We understand by "innovation" the break out and implementation of new ideas or principles, in the product/services aspects as well as in the technological and organizational aspects. Innovation must be understood as a holistic and composite notion, which must be preserved from a too specialised focus. To our mind, innovation is significantly linked to change and "movement" issues. As far as innovation is concerned, change is not a phenomenon under control, rationally regulated using structured and recurrent methodologies, but something uncontrolled, unceasing and often anonymous.

Starting from our experiences and reflections on innovation and change, for several years we have evaluated case studies and literature, shared activities with managers and those people responsible for innovation, and observed and formally interviewed them. We have been surprised by the fact that when managers, responsible people and even researchers express themselves on innovation and change, they produce contradictory information, even if they are not conscious of such a fact.

For instance, as far as competences for innovation and change are concerned, we have discovered considerable contradictory opinions in the field as to what competences must be developed in order to support innovation and change. The same person is able to declare that he prefers one thing but very often he is able to affirm the opposite, even in the same interview. For instance, autonomy and initiative, motivation and involvement and the capacity for understanding issues under their dynamic and positive aspects are often quoted in the literature and by practitioners as the basic conditions for innovation and change. But at the same time, the same persons are able to tell us that they would like to have more discipline and submissiveness in order to proceed in an organized manner and synergistically meet the strategic priorities of the group, the department or the company.

Positivist epistemology does not easily accommodate such contradictions. It obliges people to choose between one term or another. It does not understand that such opposite terms are opposed because our mental constructs consider them in exclusive terms, it does not take them into account in order to understand the dynamic relationships between these terms and to make

such dynamic relationships central to our understanding of innovation or positively changing environments. Our experience and the analysis of our observations and interviews we have performed reveals that managers who have to achieve innovation and to face change, have difficulties in understanding and acting to generate 'breakthrough' thinking and undertaking radical change (the disorder principle) whilst at the same time, gathering and channelling energies which is the result of an efficient and tightly managed group (the order principle). In order to address such a fundamental epistemological conflict, we introduce the concept of a "dialogy", taken from the epistemology of complexity by Morin (1995) as the basis for our explanations and proposals.

II. Complexity and the concept of a "dialogy"

The concept of "dialogy" (Morin, 1995) proposes the accommodation of "the included third" in one's cognitive processes. This concept is the opposite of the concept of "the excluded third" omnipresent in occidental thinking from Aristotle's philosophy to the modern philosophy of knowledge which forms the basis of binary thinking. Morin proposes "the included third" in order to generate, to give corps and effectively develop "thinking different" cognitive methods by the use of an epistemology of complexity. If we admit that, as far as innovation and change are concerned, we are effectively dealing with complex issues, which is obviously the case when managing innovation and change processes. We have to "invent" and/or share complex epistemological concepts and to find a way for people (those responsible, but certainly also anyone in the company and in the society) to appropriate and master such new cognitive habits.

The main argument for such a posture is that when we define contraries and contradictions in our current ways of conceptualizing, it is probably not because such things are "ontologically" opposite, or opposed by nature, but because they appear opposed as a result of our conceptualizing cognitive processes. It is our culture, and particularly our language which is the main raw material we use to produce cognitive constructions of the word (our understanding of the word). We do not describe the word; we only produce cognitive representations of it. In this respect, we need to build such representations of the world (past, present or future...), and to build speech in order to exchange and discuss with others (necessary for any exchange, for any cooperation and for any collective performance). We need these building bricks in order to engage in such activities. Words are our blocks. Of course, being the main material for social exchanges and cultural development, emerging over years and centuries, words and the way we use them in society are culturally shaped. In our rationalistic societies, we have a tendency to consider that each block (each word) is a piece of cognitive material. The culturally determined conscience we have of the cognitive status of these blocks (words) is that they represent the boundaries of pieces of "reality" one is dealing with. In the mental representations one generates in relation to innovation and change questions, as well as in other matters, it is difficult for people to understand that the same referent may be conceptualized using two mental categories that we may consider opposite in a cultural sense i.e. ying and yang in Chinese philosophy.

Cognitive habits that are linked to action are finally "grounded" in the "action-linked" side of our epistemology. That is to say, at the end of the day, that they represent the most important side of things, because they are the instances where ideas and discourses are confronted with action. Using words is necessary in order to represent the world (and to speak of it), but at the same time, traditional binary thinking is unable to generate sufficient intelligibility for complex issues, particularly in the management fields, as far as innovation and change are concerned. That is the fundamental reason why we have noticed that managers and people responsible generate "contradictory" speeches when they deal with innovation and change. We concluded that words and binary thinking are at the same time a necessary ingredient and the main limits to our intelligibility. Continuing in such an epistemology means remaining in a limited sphere of understanding. It is impossible to go beyond the end of understanding. People have to go further than the limits that the classical use of words *de facto* imposes on our mindsets. That is why we have to change the way we conceptualise such contradictions.

As stressed above, our thinking processes are heavily conditioned by positivist assumptions (no contradictions, single truth, objectivity...) and by our language (Foucault, 1962) when we use words, we give "labels" to things. It is of course absolutely necessary, because if we do not use words, we will not be able to either conceptualize or exchange with others. What we are not aware of is that we do these with unconscious assumptions that words correspond to things and describe things, each word or expression defining a boundary and a "substance" encapsulated within the boundary. The consequence of such a posture is that we unconsciously assume that a thing must be inside or outside the boundary. This last rule is known in the Aristotle's epistemology - the "rule of the excluded third". We have to think differently, introducing opposites and contradictions (in the classical epistemology) as relevant as a complement to the binary approach and seeking relationships and dynamics between these opposites, these dynamic co-productions being the "included third". In this paper, we want to focus on the fact that such an approach represents a rich cognitive attitude facing innovation and change.

Morin's (1995) work is obviously strongly linked to constructivist epistemologies. That is to say that such epistemologies basically assume that knowledge must be considered as the fruit of one's mental construct (representations) and not as "photographs" or mere descriptions of any existing ontological reality (more evidently if we deal with immaterial and tacit or implicit referents like change and innovation). The second important idea that we can extract from recent works in such epistemologies is that the way we proceed to generate such mental representations is obviously influenced by two kinds of considerations. Concrete conditions in which cognitive processes are embedded are of a great importance to the understanding of knowledge generation. The second is the kind of social networks in which the considered individual is immersed at the time he is having this cognitive activity, the level and kinds of activities these networks produce during the considered period, the technology which is available, the concrete material conditions, etc.

On the other hand, it is also evident that "long term" cognitive considerations have also to be considered. By "long term considerations", we mean the memorized elements of knowledge, taking into account their affective coloration and cultural and identity factors as well. Such "long term" factors are obviously involved in the formation of mental representations, as far as they condition (at least partially) the mental and affective mindset-frameworks in which mental representations emerge. We would like to underline that if such "long term" factors condition the "short term" cognitive activity of actors, particularly the formation of mental representations, it is also true that this short term activity, in turn, impacts on long term cognitive activities, as far as they will produce new memory activity and will influence the evolution of affects, attitudes, values and convictions.

This reflection suggests that we must critically challenge (*deconstruct*, if we use the Gilles Deleuze's vocabulary) the mental representations, ideas, thoughts, beliefs, and more generally the cognitive processes we produce, at least as far as we are self-conscious of them¹. One of the conceptual tools for doing so is "dialogy". As far as meta-cognitive competencies² are concerned, we certainly need to consider competences of one type as well as competences of the opposite type. We have not only to admit contraries, but also, if we think that cognition, as it is conditioned by classical binary epistemology (essentially consisting of separation i.e. creating categories using the "rule of the excluded third"), then we must also take cognizance of the fact that such boundaries are arbitrary and cognitively determined. We need to promote the idea that a term may not be thought without its opposite, and further that opposite terms produce each other, or at least influence each other. Therefore, we must imagine (cognitively built) what may happen in the trans-boundary or inter-boundary space (between categories and between opposites): that is to say how opposites build and condition each other. In doing so, we build richer representations and we prefer the ability for listening and understanding others. Therefore, we will be more ready to understand and integrate opposite opinions.

¹ This reflection opens the door to the development of one type of competences which is rarely considered i.e. the cognitive competences, and particularly one of them, related to learning, reflexivity and self-conscience.

² We will define the concept of "cognitive meta-competence" further.

An important characteristic of this epistemological posture is that the structuring categories that we usually propose for a given issue (for instance the issue of behavioural competencies for innovation and change) must be understood as a proposal for more intelligibility, not as an ontological truth. This is more akin to Checkland's (1999) use of the concept of a "notional system" i.e. such systems exist only as a notion for bringing about changes and restructuring thinking processes. Consequences of such a posture to management is that it offers a more complete and dynamic appreciation of complex issues, that is to say a lot of questions to be taken into account but not necessarily a ready solution in terms of organization (structure) and actions to be undertaken. However, it is important to note that it is a cognitive construct (representations) which is neither impartial nor objective, but a mere "product" based on our culture, opinions and beliefs and also on our intentions and our ways of working and thinking during the process.

As far as "answers" are concerned, the issue of what kind of "question" to be asked is obviously a central one. For instance, if one considers the question of meta-cognitive competencies from the point of view of which one must be improved, developed and acquired (learnt) for innovation and change (the case in this reflection), one will need to build an "answer" to this question, not to another one! Obviously, as the question is addressed, the incident reflection, individual and / or collective, will be coloured, starting from the question that has been raised. The answer will certainly be made up from a list of competencies (abilities to...). We noticed in the beginning of this research work that answers to such a question would include competencies that would be considered as opposite (following classical epistemology) and that we would try to understand how these opposites may influence each other or impact on each other.

Nonetheless, in our example, in the question we have done, the problem of such competencies' holders is not addressed. In thinking about and focussing on this question, we focus only on one question. For instance, we do not ask the following question: must the same person possess one competence and its opposite and be the "motor" of their interactions? Must opposing competences be held by different persons? Is the answer to this question contextual, that is to say specific to each issue, to each team, to each specific situation? Of course, one more time, there is no easy answer to such a question. In fact, the question of what kind of management, organization, methods and tools must be examined is as an equally complex issue. We are definitely out of the "one best way" Taylorian approach. The time of prevision, planning, task definition, training "right men in right places", structured evaluation and control is over. To our mind, all these issues must be considered assuming the epistemological assumptions we have defined above and considering aspects of the cognitive processes we have suggested. That is why the job of a manager is becoming that hard! The question today is to understand how one may enter in the play with intelligence. The **incessancy** and omnipresence of movement, innovation and change are converting these actions in a succession of complex and difficult, but also exciting challenges.

III. A dialogic glance on cognitive competencies

We have made a number of interventions related to innovation and change in "small social groups" (small companies, departments, groups, project-teams, etc). Such an experience shows that the improvement of behavioural and meta-cognitive competences constitutes a key ingredient for behaving effectively in moving and innovative environments. The problem is that behavioural and meta-cognitive competences are very fuzzily defined (Calvez and Nekka, 2006). Innovation cannot offer its full potential, or may even be impossible to achieve without the acceptance of positive mindsets and attitudes of people. We must deepen such a key issue, particularly starting from some significant examples, some specific kinds of meta-cognitive competences. This approach will be made using dialogic mode as its epistemological base.

What are "meta-cognitive competencies"?

As underlined above, in today's environments, it is obvious that behavioural competencies are of key importance. Literature is congruent on this point, arguing that new organizational forms, cooperative modes of work organization and the necessity for people to "offer" their intelligence

and creativity require new kinds of behaviour based on responsibility and involvement. We are completely in agreement with this posture. Nevertheless, the point we want to highlight in this contribution is that beside “classical” behavioural competencies we have to take into consideration another kind of competency that we name as “meta-cognitive competences”. As explained above, we think that new global and dynamic environments change dramatically the groundwork on which the question of innovation and change are being considered. Challenges are becoming unceasing and much deeper, faster and harder. We are not really aware of the depth to what is happening, as classical cognitive assumptions and solutions do not seem to apply anymore. Therefore, as managers or even simple workers, we do not know how to behave, nor what may be the relevant solutions. Complexity is often the word which expresses these difficulties. The word is accurate, of course! But it requires taking time to “think about thinking”, trying to understand what we could do in order to “think differently” (that is why we propose the expression of “meta-cognitive” competencies: What must be changed in our cognitive processes in order to understand better what is happening in the world, or at least in the world of organizations?? And then, what could we change in our behaviours?

As far as complexity is concerned, a fundamental epistemological question is about stating the following issue. Obviously, there is no problem for assuming complexity as an ontological characteristic of any concerned organizational question. But the problem is that if we assume this complexity, we must also assume that any analysis produced on such a referent is necessarily partial (not complete and not impartial). Complexity means we have no access to truth in the positivist and rationalist sense. We have to admit this change in considering the purpose of science. Our scientific activity is not impartial. It may be rigorous, which means that we must try to investigate, identify and control the dangers and limits of our posture, but not objective. The quest for objectivity is certainly coming from afar, but is definitely not a characteristic of knowledge, particularly in affairs where people are thinking about themselves and their conditions and where “political” aspects are relevant.

Cognitive processes, which “produce” the knowledge, are strongly conditioned by cognitive routines and they are, consciously or otherwise, coloured by one’s convictions, values and culture and at the same time, by the concrete and material conditions of the considered situation itself and of one’s integration with it. By the way, emotions and affects, emotional intelligence, are equally central to this activity. What motivates us to be interested in a question? How will we choose the way of structuring the project or designing the research? What are our intentions? What is the nature of the political environment that will define the “politically correct” acceptable statements? Who are the “clients” of such an activity? All this will decide, or at least condition the questions we will be interested in, the ways of reasoning and investigating we will engage in, the explanations we will produce, the facts we will highlight, the modes of understanding things and their dynamics, etc. This is true for everybody: researchers definitely, but also managers and simple workers.

For instance, a particular observation we can make in innovation and change issues in western countries is that good practice, successes and positive results often seem to be considered as exceptions or unusual facts: they must be identified, formalized, diffused, and shared as if unconsciously, the normal state of things was necessarily bad and negatively charged. Therefore an interesting challenge, as far as change and innovation are considered, should be to make these desirable aspects to be considered normal or positively charged. Obviously, “negative charge” feelings also are a cognitive issue. Following the theory of conventions (Reynaud, 1989), if people develop negative or depressed feelings about their environment, then their representations and conceptualizations are negatively charged (highlighting failures, routine, lack of interest, etc.). Because mental representations are negatively charged, people carry on developing negative feelings and go on producing negatively charged mental representations. It is like an “autopoietic system” that Härmäläinen and Saarinen (2006) call a “mutual holding back system” in which the fact of considering every day’s actions and issues negatively produces negative thoughts. This means that local actions lead to active relations with each others and therefore must be one of the entry points to the issue in order to break this negatively oriented circle.

All these competencies relate to the ability to positively conceptualize problems, situations and their dynamics must be developed and acquired or learnt by actors. However, as outlined above

and as suggested in the theory of reflective learning through “cognitive redefinition”, (Schein, 2002) or applications of “enaction” theory by Varela and Maturana (1980), We believe that this kind of learning can only be done in the context of concrete actions. That is to say that limited actions and positive achievements involving the concerned actors must be realized and capitalized (in a kind of loop) by concerned actors. Then processes of transfer and diffusion may be set up, but they cannot be any kind of “cut and paste”. They always must be realized, built and capitalized with concerned actors themselves.

Such considerations are directly linked to the mental processes people use in their cognitive activities. As such, competences have to do with the cognitive control that people may exercise on their own cognitive activities (“thinking different”), even if it is necessary to understand the question along a “socio-cognitive” dimension. Of course the individual “in-brain” activity is central, that is why we propose to name such competences as “meta-cognitive competences”. Nonetheless, as far as such cognitive evolutions are concerned, it is obvious that the role of the environment, contacts and interchanges with others and the animation of the considered group are also very important, being considered in their tight interaction with the mentioned “in-brain” activities. Both must be considered as working together in a tight knitting interaction (it is a kind of dialogic posture we apply to our own reflection).

Applying a dialogic approach to “meta-cognitive competencies”

The main conclusion we are able to deduce from our reflections is that the issues we are dealing with, that is to say how to develop innovation and change and how to involve people in such positive perspectives, require promoting complex thinking. As the challenge is to change our cognitive processes in order to better understand the fundamental challenges of dynamic complexity and to build **how** to behave in face of it, complex thinking is obviously made of several aspects, of several interrelated dimensions, many of them remaining to be discovered. As we have stated above, we will present an example, among several possible dimensions: the dialogical principle.

We will start from the idea that the encouragement of local initiatives and actions, in all the kinds of activities of the company, not only on products and technology, must be developed. Initiative and positively oriented mindsets are obviously necessary in the face of immobility, submissiveness and negative mindsets, developed, or at least maintained by traditional organizational modes. As long as structures and activities are organised in a top-down way, as long as the organizational modes and the power system in the company consider execution is limited to the operational levels and reflection, design and control are the preserve of the higher levels of organizational pyramid, then the development, involvement, feelings of belongings and optimistic behaviour may be difficult to achieve. One cannot act and behave as if such characteristics were not present in considered environments and if there is no necessity to fight against them. On the other hand, it is also important to consider that the values and modes of organization that are at work in taylorist environments also have some virtues, which allow channelling of energies in ordered ways of developing things, which are certainly important characteristics in order to avoid complete anarchy. Considering these two arguments, people are able to explain that they are against and pro one form of organization or the other! That is why we need the “dialogical principle” in our cognitive toolbox for developing complex thinking.

Some organizations are currently considered as “ideal types” of Taylorian organizations. They generally show a strong top down hierarchical organizational chart, develop precise definitions of tasks and effective planning systems. However, any Social-psychologist knows that such an organization is only able to work (in a more or less efficient way) because the effective modes of work and communication do not conform to the letter and the spirit of Taylorian principles. It may be because the hierarchy itself understands that transversal modes of work, communication and cooperation (like processes and projects) are needful in order to undertake the dangers of “self-locking” that a Taylorian organization represents in face of the extreme dynamic variety of environments (in a systemic meaning). It may be also because workers invent “subversive” ways of working, communication and cooperation that permit them to work and produce their output. Or it may be a natural combination of both. Nevertheless, some scientists think that the fundamental nature of Taylorism remains to some extent in such organizations and in every part of it. That is why some people speak of “neo-Taylorism” when

they consider such phenomenon, underlying that such organizations remain Taylorist as their fundamental dominant paradigm. That is also why such organizational modes may be considered as producers of “mutual holding-back systems” and, following the theory of conventions, are in turn reinforced by it. Nonetheless, we think that such evolutions are opening different ways of working at the same time, as a kind of struggle between the old model and new flatter forms of organizations based on empowerment, initiative, cooperation and a certain degree of disorder!

In fact, local initiatives (i.e. disequilibrium and disorder, in relation with Taylorist order) are desirable for innovation and change. But the ambient culture is generally against such initiatives. It is an aspect of the struggle we mentioned above. It is impossible, and possibly dangerous, for a manager to understand situations and to behave as if the current organization, ambient negativity and its related behaviours were not at work. In fact, this negativity is made of several ingredients i.e. positive valuation of order and equilibrium, reluctance to change, fear for the future (uncertainty), submissiveness, reluctance to take on responsibilities, etc. But, at the same time, it is also dangerous to act as if degrees of freedom did not exist in any kind of organization and as if the necessity for innovation and change could be ignored. To our mind, our ways of thinking must use epistemological modes of reasoning, issues have to be approached in a dialogical way; the issues we are dealing with must be considered by applying both opposite perspectives, considering them as acting in conflict as well as in mutual co-production relationships. The person may be responsible for innovation or may even be a single worker empowered to take initiatives. Conceptualizing ideas without using dialogical mode (considering interacting opposites) may generate only a poorer understanding of the situation. The fundamental characteristics of dynamics, positivity and self confidence they are supposed to favour in the mental representations of people will necessarily be frustrated.

IV. Conclusion

The role of the leader or manager is critical for the developments of dialogical “meta-cognitive competencies”. As far as dialogy is concerned, leaders and managers must be aware of the dual manner of considering ideas when they start on the management of the transformation processes they manage. They have to encourage local initiatives and minor improvements and to organize capitalization and learning modes on them in order to make their teams move in a positive way, and to generate positive mental representations in their minds. At the same time, they must also manage this in tune, or even in conflict, with the aspects of organizational order. It is necessary in order to stay on the edge of chaos but not lead to anarchy. Synchronising order with disorder and understanding how they are mutually producing and conditioning each other constitute an important part of their art of management. It is obviously a question of on-going personal learning. The other responsibility they have is to help people for whom they are responsible to learn from such “meta-cognitive competencies” in their day to day activity.

There is no generic or recurrent method for facilitating and managing innovative activities. In this paper we examined current research and concluded that they are inconsistent with our own research. Complex thinking must be promoted to engage and understand complex movements. Focussing on a particular angle of complex thinking, our research suggests that we need to address two opposing and contradictory principles at the same time, considering the interrelationships that link them together and that make them susceptible to be conceptualized. Since Positivistic epistemology cannot address these contradictions, we proposed the use of Morin’s “dialogy” concept as a “cognitive discipline” helpful for addressing the challenge. For instance the principles we have chosen in this paper are the order and disorder principles. Instead of current cognitive disjunction (let us consider as an example the following statement: a situation characterized by order [submissiveness] requires a cure of disorder [initiative]), we will try to conceptualize ideas in oppositions and in their interactions. Order cannot be conceptualized without the concept of disorder. The inverse relation is true as well. And it is important to conceptualize how both are dynamically linked in order to act and behave in an intelligent way.

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